ContinuUM

University of Michigan
Department of Mathematics
NEWSLETTER • 2023

## View From the Chair's Office
## Karen Smith

I am excited and humbled to have the opportunity to serve as the next chair of this great mathematics department, which I have called home in one capacity or another for most of the past thirty-five years. Our outgoing chair, Tony Bloch, has steadfastly steered the department through some of the most difficult times in memory; we should all be grateful for his service through the pandemic and cultural turmoil of the past six years.

I am fortunate to have several experienced administrators by my side: Kristen Moore, Sergey Fomin, and Dick Canary will continue as Associate Chairs for Education, Graduate Studies, and Term Faculty, respectively. Victoria Booth will replace Joe Conlon as Associate Chair for Regular Faculty. Thank you Kristen, Sergey, Dick and Victoria! I am also grateful for the guidance of our Chief Administrator Doreen Fussman, who has been running the department now for over twenty years!

There are many challenges ahead, but also many opportunities. The LSA faculty has been contracting, leaving the math department with about 10% fewer professors compared to recent years; we have not been able to replace many faculty who have retired or otherwise left. We've been promised, however, that we will be able to rebuild after a number of upcoming retirements. You can help us out by directing outstanding candidates to apply.

Among recently retired faculty is Mel Hochster, who retired in December, 2022 after over 45 years of service. Mel's illustrious career includes the production of 49 PhD students (including myself!), election to the National Academy of Science, and a nine-year tour of duty as department chair. During Mel's reign as chair, the ranks of our female professors increased dramatically. We will all miss seeing Mel playing bridge in the common area at lunchtime!

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## Parting Notes from
## Tony Bloch

In closing this period as chair I would just like to say what a pleasure and privilege it has been leading such a vibrant and exciting department. It has been wonderful to see the real dedication in our department to all aspects of academic life encompassing research, teaching and service within and without the department. The vibrancy of the department is reflected in the excellent seminars we have every working day, in all the visitors that come by, and in the talks and seminars that our faculty give all over the world. It has also been so gratifying to see outreach in programs like the Math Corps.

I would like to thank everyone for their contributions and for making my job possible and enjoyable—this extends to the faculty at every level, including those who have served in various leadership positions and helped me out through the years, the graduate and undergraduate students, and our dedicated and remarkable staff under the leadership of Doreen Fussman. I could also not have managed without the excellent help of Heather Kleber.

I feel confident that Karen Smith will lead the department in new and exciting ways and I wish her all the best for the future. Dean Anne Curzan and her staff at the college have been a pleasure to deal with as well, and I wish Anne all the best when she steps down at the end of this academic year. One of the nice aspects of being chair was being able to interact with the leadership of other departments in LSA and indeed throughout the university. It gives one an appreciation of all the good things that go on throughout our institution. It has been great to see so many connections that our colleagues have with other departments and colleges and I hope that this continues and expands.

The mathematics community in our department is a supportive and exciting place to work and I am optimistic that it will continue to be. There are many new areas in mathematics to be explored and I am sure our department will be at the forefront of these developments. I wish everyone the best going forward.

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# Faculty News

**Professor Lydia Bieri** was named to the 2023 class of Fellows of the American Mathematical Society. Bieri is cited for her contributions to mathematical general relativity and geometric analysis.

**Professor Victoria Booth** was awarded the 2023 J.S. Crawford Prize from the SIAM Activity Group on Dynamical Systems. The prize recognizes her exceptional research in mathematical biology and in particular the formulation, analysis, and interpretation of dynamical systems models of sleep-wake cycles.

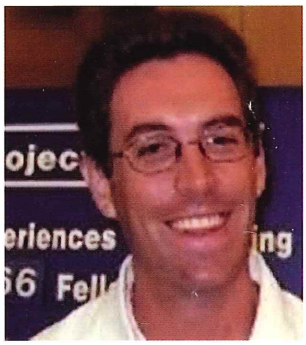
**Peter Field Collegiate Professor of Mathematics Liliana Borcea** has been elected to the American Academy of Arts and Sciences. Members are recognized as world leaders in the arts and sciences, business, philanthropy and public affairs.

**Roger M. Thrall Collegiate Professor Sergey Fomin** has been elected to the American Academy of Arts and Sciences. Members are recognized as world leaders in the arts and sciences, business, philanthropy and public affairs.

**Associate Professor Wei Ho** was named to the 2023 class of Fellows of the American Mathematical Society. Ho is recognized for her contributions to number theory and algebraic geometry, and for service to the mathematical community.

**Lecturer Paul Kessenich** has been named a Collegiate Lecturer, honoring his outstanding contributions to instruction with the Mathematics Introductory Program. Kessenich was instrumental in fundamentally reshaping courses to support instructors' understanding of and ability to use equity-focused instruction, and he expanded the flexibility and support provided to all students in the courses. As coordinator, he also supports and mentors the graduate student and postdoctoral instructors teaching the courses, and provides training and mentorship for new instructors.

**Professor Sarah Koch** is the recipient of the 2023 Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics from the Mathematical Association of America. The award honors college or university teachers who have been widely recognized as extraordinarily successful and whose teaching effectiveness has been shown to have had influence beyond their own institutions.



**Karen Rhea Collegiate Lecturer Gavin LaRose** has been named a Teaching Professor by the College of Literature, Science and the Arts. This promotion recognizes in part his excellence in teaching, commitment to growth in both knowledge in the discipline and pedagogy, and notable service to the department, the university, and the profession.

## Michigan Reception

### 2024 Joint Mathematics Meetings

**Thursday, January 4, 2024**
**6:00 pm to 7:30 pm**

**San Francisco Marriott**
**Marquis Nob Hill CD Room**

RSVP to math.mich@umich.edu

All are welcome! See you in San Francisco!

## Postdoc Faculty Achievements

The department is very proud that many of our postdoctoral assistant professors (current and recent) have received individual National Science Foundation (NSF) grants in the last few years. An individual NSF grant is a tremendous accomplishment for an early career mathematician. Individual NSF grants support the research of recipients by providing travel money and summer salary.

**NSF Grants Received Since 2021:**

Zhen Chao (Applied Mathematics)
Ruiyan Chen (Logic and Foundations)
Qi Feng (Stochastic Analysis and Mathematical Finance)
Matthew Harrison-Trainor (Mathematical Logic and Computability Theory)
Karol Koziol (Representation Theory)
Aida Maraj (Algebra and Algebraic Geometry)
Jakub Witaszek (Algebraic Geometry)
Jörn Zimmerling (Numerical Methods for Partial Differential Equations)

NSF Postdoctoral Fellowships provide funds for travel and to reduce teaching loads.

**NSF Postdoctoral Fellowships Since 2021:**

Martin Bobb (Geometry and Topology)
Robert Cass (Number Theory)
Lena Ji (Algebraic Geometry)
Andrei Prokhorov (Applied Mathematics and Analysis)
George Seelinger (Algebraic Combinatorics)
Austyn Simpson (Commutative Algebra and Algebraic Geometry)
Theodore Weisman (Geometry and Topology)
Georgio Young (Mathematics and Analysis)

Our department has a NSF Research Training grant (RTG) in Number Theory which provides travel money and teaching reductions to graduate students and postdoctoral fellows.

**RTG Postdoctoral Fellows in Number Theory 2023-24:**

Robert Cass
Sean Cotner
Alex Dobner
Alexander Hazeltine
Amichai Lampert

The department also offers several additional named postdoc positions that are funded through endowed gifts. These funds also provide research support for the recipients.

**Byrne Research Assistant Professors 2023-24:**

Ali Kara (Financial and Actuarial Mathematics)
Donghan Kim (Financial and Actuarial Mathematics)

**Donald J. Lewis Research Assistant Professors 2023-24:**

Jonathan Husson (Probability Theory)
Xiao Ma (Analysis)
Elad Zelingher (Number Theory)

## New Faculty

**Ibrahim Ekren** joined the department as an Associate Professor. He was a member of the department from 2017 to 2018, holding the position of a Byrne Postdoctoral Research Assistant Professor.

After receiving his MS in probability and finance from University of Paris 6, Ekren earned his PhD in mathematics from the University of Southern California in 2014. From 2014 to 2017 he was a postdoctoral researcher at ETH Zurich. He was an Assistant Professor at Florida State University from 2018-2023, during which time he mentored four PhD students.

Ekren joins the UM faculty in the area of financial mathematics. His main research areas include stochastic control theory and partial differential equations.

**Sarah Peluse** joined the department as an Assistant Professor. She is also a LSA Collegiate Fellow, an initiative aimed at recruiting exceptional early career scholars. After receiving an undergraduate degree in mathematics from the University of Chicago, Peluse attended Stanford University, where she received her PhD in mathematics in 2019.

After graduating, Peluse was awarded a National Science Foundation Postdoctoral Research Fellowship, and spent 2019-2020 at the University of Oxford. She was a Veblen Research Instructor at Princeton University and the Institute for Advanced Study from 2020-2023.

Peluse studies arithmetic combinatorics and analytic number theory, particularly with regards to arithmetic patterns in dense sets. Her work has been recognized with the 2022 Dénes Kőnig Prize from SIAM, and the 2022 Maryam Mirzakhani New Frontiers Prize from the Breakthrough Prize Foundation.

**James Van Loo Fellows 2023-24:**

Philip Arathoon (Analysis)
Elliot Blackstone (Applied Mathematics)
Nicholas Geiser (Applied Mathematics and Physics)
Dae Wook Kim (Applied Mathematics)

# Two Faculty Members Retire

**Mel Hochster**, the Jack E. McLaughlin Distinguished University Professor of Mathematics retired from active faculty status in December, 2022, after more than 45 years with the University.

After attending Harvard University for his BA in mathematics, Hochster received his PhD from Princeton University in 1967. He held faculty positions at the University of Minnesota (1967-73), and at Purdue University (1973-77). Hochster joined the UM mathematics faculty in 1977 as a professor, was named the R.L. Wilder Professor in 1984, the Browne Professor in 1993, and received a Distinguished University Professorship in 2004. He was elected to the National Academy of Sciences and the American Academy of Arts and Sciences in 1992, received a Guggenheim Fellowship in 1982, and the Sokol Faculty Award in 2001. From 2008-17, Hochster served as Chair of UM mathematics.

Very few people revolutionize their fields; it is fair to say that Hochster has done so twice. Early in his career, he was a research pioneer in the burgeoning field of commutative algebra, especially the study of modules over local rings. He established classic theorems concerning Cohen-Macaulay rings, invariant theory and homological algebra. Hochster's best-known work is on the homological conjectures, many of which he established for local rings containing a field, thanks to his proof of the existence of big Cohen-Macaulay modules and his technique of reduction to prime characteristic. His later innovative work on tight closure (with Craig Huneke) has found unexpected applications throughout commutative algebra and algebraic geometry. Hochster has more than 110 scholarly publications, with numerous collaborators.

Hochster has been instrumental in attracting many top young scholars to faculty and postdoctoral positions, as well as a large number of graduate students. In his long and distinguished career, he mentored 49 doctoral students, many of whom have become leaders in the field themselves. Hochster dedicated much time and effort to ensure inclusion of underrepresented scholars in mathematics, in particular advancement of women in the field. He was a founding member of the STRIDE Committee, and long served on the Advance Advisory Board. His service to the University and the mathematics community is extensive and wide-reaching.

While not pursuing mathematics, Hochster could regularly be found in the Math Common Room working on puzzles. The daily bridge games he organized were patronized by novice and expert alike. All were welcome to join the table. If he was not in East Hall, Hochster was likely at his usual spots at neighboring coffee shops or restaurants.

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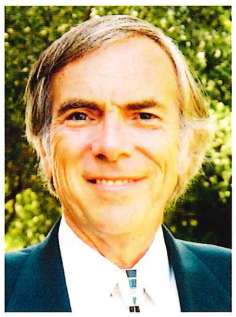
**Robert E. Megginson**, Arthur F. Thurnau Professor of Mathematics, retired from active faculty status in June, 2023.



After receiving a BS in physics from the University of Illinois in 1969, Megginson worked in industry at the Roper Corporation. He returned to the University of Illinois and received his PhD in mathematics in 1984. He was on the faculty of Eastern Illinois University before joining the UM mathematics faculty in 1992. He was promoted to professor in 2000, and was named a Thurnau Professor in 2008. Megginson was the Associate Dean for Undergraduate and Graduate Education in the College of Literature, Science, and the Arts from 2004-10. He also served as Deputy Director of the Mathematical Sciences Research Institute at the University of California, Berkeley, from 2002-04.

Megginson studied functional analysis, the geometry of Banach spaces and the problems in nearest-point theory in such spaces. His interests gravitated toward mathematics and STEM education, and climate science, particularly as it affects understanding by students from underrepresented groups. He sought ways to address disparities in early education as well as representation in higher education, with a focus on Native American groups. Megginson is a Sequoyah Fellow of the American Indian Science and Engineering Society, working actively through this organization to further the participation of his people in mathematics. He serves as a member of and has chaired several national committees dedicated to this cause. His service includes many terms on various committees of the Mathematical Association of America and the American Mathematical Society. He specifically excelled in promoting teaching of mathematics and mentoring of students from all backgrounds.

Throughout his career, Megginson received recognition for his outreach efforts. He was awarded the U.S. Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring in 1997, the Distinguished Mentor Award of the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science in 2019, and is portrayed in the book 100 Native Americans Who Shaped American History. Megginson was named a fellow of the American Association for the Advancement of Science in 2009. He received the UM Harold R. Johnson Diversity Service Award in 2000, the UM Regents' Award for Distinguished Public Service in 1999, and was recognized three times with the LSA Excellence in Education Award.

## Notes from the Chair

(*continued from page 1*)

Professor Bob Megginson also retired in June 2023. Bob has served the department since 1992, and is highly laureled for his work with the Native American scientific community and with underrepresented minorities more broadly. For example, he won the US Presidential Award for Excellence in Science, Mathematics and Engineering mentoring in 1997. He also won the Ely S. Parker Award from the American Indian Science and Engineering Society in 1999 for his lifetime service to the Native American scientific community.

Replacing Mel and Bob, we were lucky to have hired two new professors. Former postdoc Ibraham Ekren joins us as an Associate Professor in the Quant program. Sarah Peluse, whose research is in arithmetic combinatorics and analytic number theory, joins us as an Assistant Professor and LSA Collegiate Fellow. Alumnus Robert Cochrane (PhD 2022) was hired as a Lecturer and coordinator for Math 116 this fall.

Speaking of teaching calculus, you may have read in the national news that Michigan's GEO—the graduate student instructor (GSI) union—recently ratified a new contract after a strike of almost five months. They negotiated a historic pay raise of about 21.35 percent over three years. As mathematicians, you might be amused to know that this figure was widely misreported in the media as a 20 percent raise: GSIs will get an 8% raise in year one followed by 6% in years two and three, so that a salary of N dollars last year will become a salary of (1.08)(1.06)(1.06)N or about 1.2135N dollars in 2026.

As usual, Michigan math faculty continue to rack up national awards. Professors Liliana Borcea and Sergey Fomin were elected to the American Academy of Arts and Sciences this past year. Professor Sarah Koch received the 2023 Haimo Award for Distinguished College or University Teaching from the Mathematical Association of America, honoring "teachers who have been widely recognized as extraordinarily successful and whose teaching effectiveness has been shown to have had influence beyond their own institutions."

Michigan math alums continue to do amazing things in the real world with their math training. Olivia Walch's (AIM PhD 2016) company Arcascope continues to rack up investors and contracts, including a recent partnership with Henry Ford Health to boost safety, satisfaction and productivity among shift workers by adapting their circadian rhythms using targeted recommendations about light exposure. Andrey Mishchenko (PhD 2012) is at Open AI producing "generative artificial intelligence" that writes code for Chat GPT. Believe it or not, Chat GPT did a pretty good job writing some of our qualifying exams for the PhD program. Just kidding! Or am I?

Please drop us a line and let us know how you are using your math degree out there in the real world. We've heard from some of you that there has never been a better time to be a mathematician looking for work than now, in the data century. I'd love to hear what you are doing!

## G. Peter Scott ~ 1944-2023

Professor Emeritus Peter Scott passed away September 19, 2023, after a battle with cancer.

Professor Scott was born in England to Bernard and Barbara Scott. His father was a successful mathematician who worked in Bletchley Park and his mother was a beloved poet and sculptor. After attending Oxford University for his BA in mathematics, Professor Scott received his MSc and PhD from University of Warwick in 1969 under the direction of Brian Sanderson. He held ascending appointments at University of Liverpool from 1968 to 1987, receiving tenure in 1972, and was named Senior Lecturer in 1980, then Reader in 1984. He joined UM as Professor of Mathematics in 1987. In 1986, Professor Scott was awarded the Berwick Prize by the London Mathematical Society. In 2012, he was named a Fellow of the American Mathematical Society. He retired from active duty in 2018.

Professor Scott studied geometric group theory and low-dimensional geometry and topology. In geometry and topology, he is best known for his fundamental research on three-dimensional manifolds, but his work also encompassed important contributions to the theory of Kleinian groups, differential geometry, and the study of minimal surfaces. In geometric group theory, he pioneered the study of subgroup separability and explored canonical splittings of groups which are analogues of important topological decompositions of 3-dimensional manifolds. He was regarded as a masterful expositor who wrote influential survey papers, most famously on the geometrization of 3-manifolds and on the use of topological techniques in geometric group theory. He published over 60 research papers with several co-authors.

During his UM tenure, Professor Scott was very involved with the Mathematics Doctoral program. He supervised 21 PhD students and was on the committees of many others. He served for a total of 11 years on three separate occasions as Chair of the Doctoral Committee. He was also Director of Graduate Admissions for a year, reviewing and recruiting students for the Mathematics PhD program. Professor Scott served on several other departmental committees, including terms on the Executive, Long Range Planning, and Personnel Committees.

Professor Scott had three children, Carol, Kathy, and David. He was known for an adventurous attitude and regularly sailed on the Norfolk Broads in England. A memorial service will be held November 11, 2023 in Brighton, MI.

# Recent Doctorate Degrees

**Karen Butt** completed the dissertation "*Closed Geodesics and Stability of Negatively Curved Metrics*" under the direction of Ralf Spatzier. She has a position at the University of Chicago.

**Attillo Castano** completed the dissertation "*A Berkovich Approach to Perfectoid Spaces*" under the direction of Mattias Jonsson.

**Will Dana** completed the dissertation "*Stretched Root Systems and the Geometry of Shard Modules*" under the direction of David Speyer. He has a position at Santa Clara University.

**Bradley Dirks** completed the dissertation "*Using Mixed Hodge modules to Study Singularities*" under the direction of Mircea Mustaţă. He has a position at Stonybrook University.

**Alex Ginsberg** completed the dissertation "*Firing-rate Models in Computational Neuroscience: New Applications and Methodologies*" under the direction of Victoria Booth and Danny Forger.

**Jonathan Guzman** completed the dissertation "*Repeated Binary Action Coordination Games with Uniform Noise and Prior*" under the direction of Trachette Jackson.

**James Hotchkiss** completed the dissertation "*Hodge Theory of Twisted Derived Categories and the Period-Index Problem*" under the direction of Alex Perry. He has a position at Columbia University.

**Alex Kapiamba** completed the dissertation "*Parabolic Towers and the Asymptotic Geometry of the Mandelbrot Set*" under the direction of Sarah Koch. He has a position at Harvard University.

**Caleb Mayer** completed the dissertation "*Mathematical Modeling of Circadian Rhythms from Wearable Data across Populations and Health Conditions*" under the direction of Danny Forger.

**Alapan Mukhopadhyay** completed the dissertation "*Frobenius-Poincaré´ Function and Hilbert-Kunz Multiplicity*" under the direction of Karen Smith. Alapan has a position at École Polytechnique Fédérale de Lausanne.

**Carsten Peterson** completed the dissertation "*Quantum Ergodicity on Bruhat-Tits Buildings*" under the direction of Ralf Spatzier. Carsten has a position at Paderborn University.

**Yuping Ruan** completed the dissertation "*Filling Volume Minimality and Boundary Rigidity of Metrics Close to a Negatively Curved Symmetric Metric*" under the direction of Ralf Spatzier. Yuping has a position at Northwestern University.

**Sanal Shivaprasad** completed the dissertation "*Convergence of Measures on Non-Archimedean Hybrid Spaces*" under the direction of Mattias Jonsson.

**Binglin Song** completed the dissertation "*Balanced Heat Transport and Optimal Cooling*" under the direction of Selim Esedoglu.

**Ursula Trigos-Raczkowski** completed the dissertation "*Coexistence through Life-History Variation: Revisited Intractable Models with Explicit Patch Aging and/or Size-Structure*" under the direction of Trachette Jackson and Annette Ostling. She has a position at the University of Texas - Austin.

**Nancy Wang** completed the dissertation "*Local Cohomology Modules and Motivic Chern Class Computations*" under the direction of Mircea Mustaţă.

**Nicholas Wawrykow** completed the dissertation "*Higher Order Representation Stability and Disk Configuration Spaces*" under the direction of Jenny Wilson. He has a position at the University of Chicago.

**Yueqiao Wu** completed the dissertation "*A non-Archimedean Approach to K-stability of Log Fano Cone Singularities*" under the direction of Mattias Jonsson. Yueqiao has a position at the Institute for Advanced Study.

**Chris Zhang** completed the dissertation "*Classification Results of Orbit Closures of Translation Surface*" under the direction of Alex Wright.

**Yili Zhang** completed the dissertation "*Learning-based Decision-making under Stochastic and Adversarial Uncertainties*" under the direction of Asaf Cohen.

**Bradley Zykoski** completed the dissertation "*A Polytopal Decomposition of Strata of Translation Surfaces*" under the direction of Alex Wright. He has a position at Northwestern University.

*Right: PhD recipients James Hotchkiss and Bradley Dirks.*

# 2023 Graduate Fellowships & Awards

### Allen L. Shields Fellowship
Nicholas Wawrykow

### G. Cleaves Byers Award
Preetham Mohan

### Luther Claborn Fellowship
Shelby Cox

### Arthur H. Copeland Memorial Fellowship
Jineon Baek

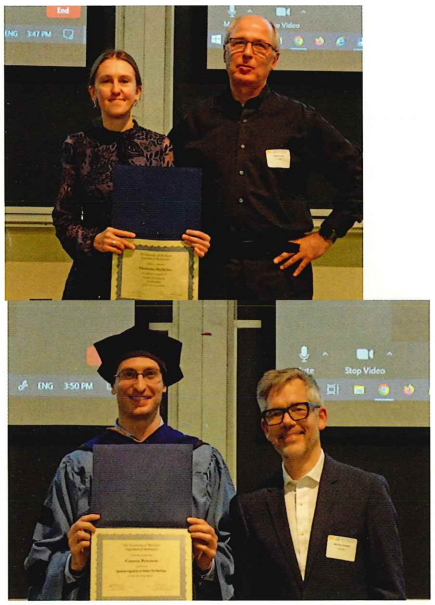
### Wirt and Mary Cornwell Prize
Bradley Dirks

### Cameron & John Courtney Scholarship
Oliver Knitter

### E.S. & A.C. Everett Memorial Fund
Christopher Zhang

### A. V. Flint Memorial Scholarship
Chuhao Sun

### Donald J. Lewis Fellowship
Andy Jiang



*Above Top: Masters recipient Ekaterina Shchetka with Sergey Fomin; above bottom: PhD recipient Carsten Peterson with Mattias Jonsson. Right top: PhD recipient Atillo Castano with Mattias Jonsson; right bottom: Masters recipient Mia Smith with Sergey Fomin.*

### Alice Webber Glover Scholarship
Ethan Zell

### Juha Heinonen Memorial Fellowship
Xiaoyu Dong

### Marjorie Lee Browne Scholars
Dania Ali Abuhijleh
Gerardo Dutan
Jose Esparza Lozano
Saida Fatema
Jordan Grant
Shivana Prabala
Javier Santiago
Mia Smith

### Edwin Wilkinson Miller Award
Scott Neville

### National Science Foundation Fellows
Anthony Chen
Shelby Cox
Daniel Maes
Carsten Sprunger
Teresa Yu

### Carroll V. Newsom Award
Malavika Mukundan

### Peter Smereka Thesis Award
Christiana Mavroyiakoumou

### Prasad Family Fellowship
Swaraj Sridhar Pande

### President's Challenge
Han Le

### Rackham One-Term Fellows
Jineon Baek
Xiaoyu Dong
Ethan Zell
Reebhu Bhattacharyya
Tejaswi Tripathi

### Rackham Outstanding GSI Award
Benjamin Riley

### Rackham Predoctoral Fellowship
Ilia Nekrasov
April Nellis

### Rackham Science Award
Samuel Boardman
Emilee Cardin
Dylan Cordaro
Cyril Cordor
Anthony Della Pella
Joanne Dong
Ram Ekstrom
Saida Fatema
Oscar Gonzalez
Gary Hu
Jonghyun Lee
Daniel Maes
Moise Mouyebe
Shivani Prabala
Mia Smith
Caitlin Waddle

### Gabrielle & Sophie Rainich Fellowship
Ilia Nekrasov

### Joel Smoller Graduate Fellowship
Sameer Kailasa

### Usha Sharma Bhalla Fund
Yuping Ruan
Jiajia Guo

### Sumner B. Myers Memorial Prize
Jack Carlisle

# 2023 Undergraduate Awards and Scholarships

### UM Undergraduate Mathematics Competition
Tuong Le - First Place
Alex Xu - Second Place
Xinyu Fang - Third Place

### 83rd Annual Putnam Mathematics Competition
Alex Xu - First Place
Marcus Gozon - Second Place
Alvin Li - Third Place

### Evelyn O. Bychinsky Award
Xiaoran Chen
Adam Earnst
Marcus Gozon
Tuong Le
Teo Miklethun
Akash Narayanan
Humberto Rodriguez
Zhixuan Wu
Steven Zanetti
Yuchong Zhang

### Marc Altschull Actuarial Award
Thomas Striblen

### Marylin and Stewart Gloyer Award
Constance Parker
Kate Willemin

### Leon P. Zukowski Prize for Math Lab Mentoring
Fiona Han
Alec Zettel

### Mathematics Alumni/Alumnae Scholarship
David Donze
Audric Lebovitz

### Jack McLaughlin Award in Algebra
Nianchen Liu

### Wilfred Kaplan Award in Applied Mathematics
Minki Lee

### William LeVeque Award in Number Theory
Jiachen Kang

### Frank Raymond Award in Geometry and Topology
Liyang Shao

### George Piranian Excellence in Mathematical Writing Award
Jiachen Kang

### Irving Wolfson Award
Maximillian Roman

### Lois Zook Levy Award for K-12 Teaching
Cassandra Prokopowicz

### Sumner B. Myers Award in Analysis
Jishi Sun

### CIGNA Award
Alec Behrendt
Katherine Bednarz
Abigail Hess

### D.W. Simpson Award
Shreya Gummadapu

### Margaret S. Huntington Prize in Actuarial Research
Valerie Caldwell
Abigail Davidson
Nikki Gerodemos
Sarah Semko
Jason Siskosky
Gus Vitale
Jay Vogel
Mengyao Wang
Yufan Zhang

### Natarajan Family Award for Actuarial Science
Andy (Sun Youp) Lee

### Otto C. Richter Prize for Actuarial Science
Joshua Gordon

### Thomas S. Solomon Actuarial Award
Matthew Dykstra

### Outstanding Achievement in Mathematics
Zixuan Chen
Yubing Cui
Jia Guo
Boyang Huang
Sizhuang He
Christopher Jiang
Samantha Liu
Jonah Nan
Rui Nie
Neville Joshua Rajappa

### Donald J. Lewis Mathematical Merit Scholar Award
Connor Novak
Amanda Snyder
Houming Chen
Andrew Nguyen
Nameer Hirschkind
Haozhi Xu
Matt Wang
Ka Yu Wong

### Outstanding Graduating Seniors
Henry Fleischmann
Faye Jackson
Andrew Keisling
Yupin Kewang

### Wirt and Mary Cornwell Prize in Mathematics
Sophie Kriz

### Richard and Dorothy Carter Scholarship
Justin Berghorst
Leah Kramer
Madeline Mager
Hamarkesh Sathiadeva
Cooper Walicki

### Alan Kaylor Cline Scholarship
Haoyu Du
Ruixi Hu
Zhongming Jiang
Dhruv Kulshreshtha
Nikolas Stahl
Nathan Vanderwede

### L.C. Cortright Memorial Scholarship
Haotian Cui
Anika Palkhiwala
Gabe Weber

### Frank H. and Agnes A. Davis Scholarship
Trent Cappaert
Jackson Fair
Shreya Gummadapu
Sawyer Gustafson
Jack Langejans
Rachel Lewis
Changle Liu
Grace Morton
Aidan Murphy
Ross Neuman
Riley Rich
Hannah Rowe
Muhamad Rusmin
Taylor Siemer
Andrew Stathulis
Arman Vaswani
Adam Vella

### Carl Hahn Fischer Scholarship
David Donze
Adam Earnst
Marcus Gozon
Abigail Hess
Brandon Kirkendall
Audric Lebovitz
Nianchen Liu
Madison Morelli
Sajni Patel
Ka Fung Tjin

### David G. Hartman Actuarial Scholarship
Jack Langejans
Hunter Stanek

### Miner S. Keeler Scholarship
Xiaoran Chen
David Donze
Aayush Dutta
Adam Earnst
Marcus Gozon
Tapio Heinonen-Smith
Jiachen Kang
Miho Kasai
Tuong Vu Le
Audric Lebovitz
Jiaxi Liang
Justin Liu
Nianchen Liu
Andrew Meyer
Teo Miklethun
Akash Narayanan
Maxwell Natonson
Humberto Rodriguez
Liyang Shao
Jishi Sun

Nathan Varner
Yi Wang
Martha Wolf
Zhixuan Wu
Alexander Xu
Haochen Yang
Hankai Zhang
Yuchong Zhang
Zhe Zhang

### Mathematics Scholarship Fund

Sijia Chen
Miho Kasai
Minki Lee
Jinyan Miao
Xun Wang
Aunstin Warren
Steven Zanetti

### Virginia McCulloh Scholarship

Saja Gherri
Dhruv Kulshreshtha

### Willilam F. Poorman Scholarship

Katherine Bednarz
Matthew Dykstra
Jonathan Holland
Scott Rolf
Max Roman
Michael Williams

## University and National Award Recipients

Historically, our students of mathematics have been successful in achieving University level and national recognition. This year is no exception. Here are some of the outstanding achivements by our students.

**Steven Dunn** received the Marshall Nirenberg Award in Life Sciences from the UM Honors program.

**Henry Fleischmann** was selected as a Churchill Scholar, funding a year of graduate research and study in a STEM field at the University of Cambridge.

**Faye Jackson** received the Alice T. Schafer Award from the Association of Women in Mathematics, recognizing exellence in mathematics by an undergraduate woman. Faye also received the Stephen Smale Award in Mathematical Sciences from the UM Honors program.

**Dhruv Kulshreshtha** received the UM STEM Research Career Award, supporting highly qualified sophomores and juniors who plan to pursue a PhD or MD/PhD and research career in a STEM field.

**Minki Lee** was awarded a Goldwater Scholarship, one of the most prestigious awards a student in STEM can receive.

**Margaret Mutch** received the CEW+ Irma M. Wyman Student Grant.

The following mathematics students have received Graduate Research Fellowships from the National Science Foundation. They are all continuing their education in a STEM field.

Parmida Davarmanesh
Adam DeHallander
Steven Dunne
Henry Fleischmann
James Hazelden
Faye Jackson
Sophie Kriz
Nasser Mohammed

*Top l-r: Sarah Koch (center, holding Pippa Pig and Peppa Pig) with members of her 2019-20 Math 295 honors class; Kristen Moore with recipients of Margaret S. Huntington Awards (l-r) Gus Vitale, Sarah Semko, Abigail Davidson, Jason Siskosky. Bottom l-r: David Speyer with Outstanding Achievement in Mathematics recipient Rui Nie; graduate Aelita Klausmeier with Stephen DeBacker; happy graduates attend the commencement reception with Stephen DeBacker.*

# Summer Programs in the Mathematics Department

While the majority of the academic departments on campus enjoy a relatively uneventful and quiet summer, the Mathematics Department remains quite busy. Three very popular and active summer programs are held each year, aiming to promote math learning and research at various levels.

The **Research Experiences for Undergraduates (REU)** program hosted 29 undergraduate students in 2023. The students worked with 22 different faculty and postdoc mentors on a variety of projects. Once their projects were underway, weekly seminars were held featuring presentations by the students and mentors detailing their research topics. The subjects of research included various areas of mathematics, financial math, and applied mathematics such as mathematical biology and modeling methods. Each project resulted in a paper on the topic, written by students, jointly with their faculty mentors. You can see their projects on this website: myumi.ch/EPger.

Undergraduate student Ilir Ziba participated in the REU program in summer 2023 under the direction of postdoc Ruiyuan Chen. In describing his experience, Ilir says "My REU project, which explores logical connectives, has helped prepare me and has reaffirmed my desires to go into mathematical research." His project paper is entitled "Extension of Post's Lattice to Countable-Borel Clones." Ilir will present a talk on the topic at the Joint Mathematics Meetings, to be held in San Francisco in January 2024.

The **Michigan Math and Science Scholars** (MMSS) program was initiated in 1997, offering summer courses in math to high school students and some teachers. Math Camp, as it was known, grew over the years to attract bright high school students, many of whom eventually were accepted to study at UM. The program was such a success that in a few years it was expanded to include offerings in other natural sciences.

In 2023, MMSS hosted 437 students from 20 countries. They could choose from 21 different courses, taught by faculty and graduate students from around the college and university. The participants enjoyed additional activities including trips to Cedar Point, the Detroit Institute of Arts, and nightly gatherings for games, excursions around town, or exploring the Ann Arbor Summer Festival. Dates for the 2024 program and information on registration are available on the website: sites.lsa.umich.edu/mmss/.

The **Math Corps** program hosted middle and high school students for the fifth year. This year 68 middle school students participated with 41 high school mentors. Several of the high school students began the program in middle school and now mentor the younger participants. Current math undergraduate students and math alumni assisted in the courses and activities. Math graduate students, postdocs, and faculty directors helped the participants learn new math skills and explore activities around campus. This year, the students enjoyed weekly picnics on the Martha Cook lawn (an exclusive privilege), went to the UM Museum of Natural History, took a tour of the Big House, and created sidewalk chalk drawings with Ann Arbor street artist David Zinn. The students were excited to be joined by department chair Karen Smith, LSA Associate Dean Tim McKay, and LSA Dean Anne Curzan at the closing daily assembly. You can learn more about Math Corps at: sites.lsa.umich.edu/math-corps/.

*Math Corps students participate in some UM traditions on their tour of Michigan Stadium.*

*A highlight of the MMSS course "Art and Mathematics" is a visit from renowned Ann Arbor street artist David Zinn (left). He taught students in the classroom, then provided a demonstration. Students were successful at creating their own drawings (middle and right).*

# Where's Your Math T-shirt Been?

*When you get your math T-shirt, find a fun spot to take a picture and upload it to our website lsa.umich.edu/math/undergraduates/extracurricular-activities.html. The button "Where in the World is Your Math T-shirt" has links to a Google drive to add your photo, as well as a map where you can indicate where in the world you displayed your mathematics pride: padlet.com/mathundergradoffice/worldtshirts. You can also send them by email to um.math.tshirts@gmail.com.*

*First row, l-r: Druv Kulshreshtha (2024) in Graffiti Alley, Ann Arbor; Jeff Meyer (2013) and Sara Lapan (2013) with Luca Lapan (2044?); Mark Petty (1967) in Nordkapp, Norway, the northernmost point in continental Europe on the longest day of the year. Second row, l-r: Dotty Clore Davis (1990), Kenya Lacy (1996), and Jeff Cohen (1991) all teaching mathematics at Alpharetta High School in Alpharetta, Georgia; Frank Benford (1967) in Sydney, Australia; Jing-Yi Liu (2023) at the Metropolitan Museum of Art, New York. Bottom row, l-r: Current Math major Abby Hess sudying abroad in Arethousa, Ikaria in Greece; Math students promoting the vote in special edition t-shirts.*

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***Watch for our email on March 13, 2024!***

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## Want Your Own Math T-Shirt?

Here is your chance to represent the UM Math Department in the stylish shirts highlighted on the previous page. 2024 marks the 20th anniversary of thses shirts! Complete the order form below by placing a number (signifying the quantity desired) in the appropriate boxes (sizes are standard adult), complete your address information, and return to the address at right along with your check or money order (payable to the Department of Mathematics). **T-shirts are $10 each, shipping and handling is included.**

| | Blue | Pink | Yellow | Grey |
|---|---|---|---|---|
| Small | | | | |
| Medium | | | | |
| Large | | | | |
| X-Large | | | | |
| Onesies 12 month | | | | n/a |

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City:_____ State: _____ Zip:_____

Amount Enclosed: _____

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**Send this form with payment to:**

The University of Michigan Department of Mathematics
T-Shirt Orders
530 Church Street, 2074 East Hall
Ann Arbor, MI 48109-1043

*Online ordering and payment available at lsa.umich.edu/math/about-us/math-t-shirts.html*

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